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**— REMARKS —**

The present amendment replies to a Non-Final Office Action dated March 16, 2006. Claims 1-20 are currently pending in the present application. Claims 13-20 have been withdrawn. In the Non-Final Office Action, the Examiner rejected claims 1-12 on various grounds. The Applicant responds to each ground of rejection as subsequently recited herein and requests reconsideration of the present application.

**35 U.S.C. §102 Rejections**

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the . . . claim. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Thus, to warrant the §102(e) rejection, the references cited by the Examiner must show each and every limitation of the claims in complete detail. The Applicant respectfully asserts that the cited references fail to do so.

**Claim 1 was rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Published Patent Application No. 2003/0147127 to Duling *et al.* (the Duling application).**

The Applicant respectfully asserts that the *Duling* application fails to include each and every element of the Applicant's invention as claimed, as required to maintain a rejection under 35 U.S.C. §102(e). See MPEP 2131. The Applicant asserts that the *Duling* application fails to disclose, teach, or suggest an optical switch including a loss element having a signal loss; and a rare earth doped gain element optically connected in series with the loss element, the rare earth doped gain element operable to produce a signal gain; in which the signal gain and the signal loss are about equal, as recited in claim 1.

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The amplitude balanced optical amplifier of the *Duling* application is an amplifier and not a switch, so the signal gain and the signal loss cannot be equal or the amplifier will have no output. The *Duling* application discloses a gain/loss variation modification device (VMD) that operates based on a gain/loss profile that is complementary to that of the preamplifier. See Abstract. That is, at a particular frequency, if the amplifier 120 achieves more gain so that the amplified signal encoded at that frequency exceeds the desired power level, the gain/loss VMD 130 may introduce a loss to offset the extra gain and vice versa. See Paragraph [0038]. The straight curve labeled as "balanced amplitude" in FIG. 2(c) represents (substantially) uniform amplitude or signal power level across different wavelengths, achieved by the combination of the amplifier 120 and the gain/loss VMD 130 operating according to the gain profile and the gain/loss profile illustrated in FIG. 2(a) and FIG. 2(b). That is, the AB-optical amplifier 100 experiences a substantially equal gain regardless of the underlying wavelength. See Paragraph [0040].

Because the combination of the amplifier 120 and the gain/loss VMD 130 is an amplifier and not a switch, the gain profile and the gain/loss profile illustrated in FIG. 2(a) and FIG. 2(b) cannot be equal or the amplifier would have no output. As shown in FIG. 2(c), there is an output across all frequencies.

Withdrawal of the rejection of claim 1 under 35 U.S.C. §102(e) as being anticipated by the *Duling* application is respectfully requested.

### 35 U.S.C. §103 Rejections

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references when combined must teach or suggest all the claim limitations. See MPEP 2143. To establish *prima facie* obviousness of a claimed invention, all the claim

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limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). See MPEP 2143.03. The Applicant respectfully asserts that the cited references fail to teach or suggest all the claim limitations.

A. Claims 1 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,603,909 to Varner (the *Varner* patent) in view of Becker, et al. (the *Becker* publication) [Erbium Doped Fiber Amplifiers and Technology, 1999].

The Applicant respectfully asserts that the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims.

As noted by the Examiner, the *Varner* patent fails to disclose, teach, or suggest that the signal gain and the signal loss are about equal. However, the *Becker* publication also fails to disclose this. Figure 6.3 of the *Becker* publication as cited by the Examiner discloses that gain can vary as a function of pump power, not that the signal gain and the signal loss are about equal. The Applicants' invention does not compensate for signal attenuation to ensure reception at the receiver as stated by the Examiner, but sums offsetting signals so there is no signal at the receiver when the optical switch is turned off.

Claim 6 depends directly from independent claim 1 and so includes all the elements and limitations of independent claim 1. As discussed above, the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest that the signal gain and the signal loss are about equal. Because claim 6 depends from and incorporates the elements of independent claim 1, claim 6 is allowable over the *Varner* patent and the *Becker* publication, alone or in combination.

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Withdrawal of the rejection of claims 1 and 6 under 35 U.S.C. §103(a) as being unpatentable over the *Varner* patent in view of the *Becker* publication is respectfully requested.

B. Claims 2-3, 7-8, and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,603,909 to Varner (the *Varner* patent) in view of Becker, et al. (the *Becker* publication) [Erbium Doped Fiber Amplifiers and Technology, 1999], and further in view of U.S. Patent No. 5,475,528 to LaBorde (the *LaBorde* patent).

The Applicant respectfully asserts that the *Varner* patent, the *Becker* publication, and the *LaBorde* patent, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims.

Claims 2-3, 7-8, and 12 depend directly or indirectly from independent claim 1 and so include all the elements and limitations of independent claim 1. As discussed in Section A above, the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest that the signal gain and the signal loss are about equal. The *LaBorde* patent also fails to disclose, teach, or suggest this element. Because claims 2-3, 7-8, and 12 depend from and incorporate the elements of independent claim 1, claims 2-3, 7-8, and 12 are allowable over the *Varner* patent, the *Becker* publication, and the *LaBorde* patent, alone or in combination.

Regarding claims 2 and 7, the Abstract of the *LaBorde* patent cited by the Examiner discloses glass doped with up to 5 weight % erbium oxide, not the core being doped with at least one species of rare earth ion in the range of 5 to 75 wt% as recited in claim 2 and 7.

Withdrawal of the rejection of claims 2-3, 7-8, and 12 under 35 U.S.C. §103(a) as being unpatentable over the *Varner* patent in view of the *Becker* publication and further in view of the *LaBorde* patent is respectfully requested.

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C. Claims 4 and 9-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,603,909 to Varner (the *Varner* patent) in view of Becker, *et al.* (the *Becker* publication) [Erbium Doped Fiber Amplifiers and Technology, 1999], and further in view of U.S. Patent No. 6,430,349 to Hayden (the *Hayden* patent).

The Applicant respectfully asserts that the *Varner* patent, the *Becker* publication, and the *Hayden* patent, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims.

Claims 4 and 9-10 depend directly or indirectly from independent claim 1 and so include all the elements and limitations of independent claim 1. As discussed in Section A above, the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest that the signal gain and the signal loss are about equal. The *Hayden* patent also fails to disclose, teach, or suggest this element. Because claims 4 and 9-10 depend from and incorporate the elements of independent claim 1, claim claims 4 and 9-10 are allowable over the *Varner* patent, the *Becker* publication, and the *Hayden* patent, alone or in combination.

Withdrawal of the rejection of claims 4 and 9-10 under 35 U.S.C. §103(a) as being unpatentable over the *Varner* patent in view of the *Becker* publication and further in view of the *Hayden* patent is respectfully requested.

D. Claims 5 and 11 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,603,909 to Varner (the *Varner* patent) in view of Becker, *et al.* (the *Becker* publication) [Erbium Doped Fiber Amplifiers and Technology, 1999], and further in view of U.S. Patent Publication No. 2002/0030881 to Nilsson (the *Nilsson* application).

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The Applicant respectfully asserts that the *Varner* patent, the *Becker* publication, and the *Nilsson* application, alone or in combination, fail to teach or suggest all the claim limitations of the rejected claims.

Claims 5 and 11 depend directly or indirectly from independent claim 1 and so include all the elements and limitations of independent claim 1. As discussed in Section A above, the *Varner* patent and the *Becker* publication, alone or in combination, fail to teach or suggest that the signal gain and the signal loss are about equal. The *Nilsson* application also fails to disclose, teach, or suggest this element. Because claims 5 and 11 depend from and incorporate the elements of independent claim 1, claim claims 5 and 11 are allowable over the *Varner* patent, the *Becker* publication, and the *Nilsson* application, alone or in combination.

Withdrawal of the rejection of claims 5 and 11 under 35 U.S.C. §103(a) as being unpatentable over the *Varner* patent in view of the *Becker* publication and further in view of the *Nilsson* application is respectfully requested.

35 U.S.C. §112, Second Paragraph, Rejections

The Examiner rejected claims 5 and 11 as lacking antecedent basis for "the cladding." The Applicant respectfully disagrees. Claim 5 depends from claim 2, which recites "the loss element comprises a waveguide including a core and a cladding." Claim 11 depends from claim 7, which recites "the rare earth doped gain element comprises a waveguide including a core and a cladding." Withdrawal of the rejection of claims 5 and 11 under 35 U.S.C. §112, second paragraph, is respectfully requested.

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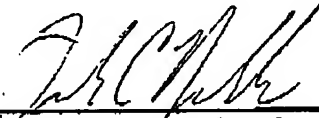
**-SUMMARY-**

Reconsideration of the rejection of claims 1-12 is requested in light of the remarks herein. The Applicant submits that claims 1-12 as set forth fully satisfy the requirements of 35 U.S.C. §§102, 103, and 112. In view of foregoing remarks, favorable consideration and early passage to issue of the present application are respectfully requested.

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Respectfully submitted,

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